

July 2011

**The CLCAC has asked for clarification of information about mishap trend analysis and the capability of the new USAMRIID laboratory containment / building to withstand breach by an F-3 tornado. The following are the CLCAC questions and USAMRIID responses.**

July 13, 2011

Dear Colonel Skvorak,

The Committee has reviewed the information you provided in response to our May 20, 2011 letter. With respect to the design basis, you have indicated appropriate standards were used and sufficient analyses performed for various events to preclude a release of hazardous material to the work force or the public. However, it is not clear whether an analysis has been done for cascading events such as a tornado with loss of all power and a fire. In addition, it is not clear what the design basis tornado wind speed is for the facility without breaching containment. We would appreciate clarification on these matters.

As to the summary of mishaps for the last five years, we are interested in the causes e.g. violation of procedures, inadequate procedures, equipment failure, operator errors and we apologize for not being clearer on this request. We would appreciate if you would provide revised information.

Again, the Committee thanks you for your cooperation and leadership in improving public confidence and trust in the operations at Fort Detrick and we look forward to continued progress.

And July 15

Colonel Skvorak,

In your briefings you indicated that USAMRIID tracks facility operating mishaps (not OSHA events) and did trending as a means of monitoring for safe facility operations. Our intent here is to show the public that USAMRIID is using effective management systems for maintaining a high level of worker and public safety, by showing that you are doing the trend analysis. We believe that the information we asked about in the suggested format will show a significant improvement over the period April 1, 2002 to December 1, 2005. By providing the causes for facility operating mishaps (again not OSHA events) the type and severity of mishaps will be self-explanatory.

Now, as to the design basis tornado, our question is whether the new USAMRIID building and associated containment systems will be able to withstand an F-3 tornado with total loss of power and a fire, without release of any hazardous

material, animals, insects or other vectors into the external environment. We would also like to know whether your analysis has considered internal equipment movement and external projectiles of a type and intensity that can occur in an F-3 tornado, and that could impact overall containment integrity. Based on the information already provided, the new USAMRIID has multiple containments, which is excellent. Our questions relate to breach of all containment systems, resulting in exposure to the outside environment.

We have received numerous questions from the public about tornados, specifically F-3 tornados. F-3 tornados have occurred in Frederick County and in the region. This is an effort to address public concerns.

Please advise whether this reply adequately addresses your questions.

We appreciate your cooperation in helping us find the best way to provide information to the public.

best regards,

Beth Willis Chair, CLCAC

### **USAMRIID response of July 26, 2011**

#### **1. Classification of Mishap by Cause**

I'm not sure how categorizing mishaps by cause will provide the public any indication of severity or provide evidence that USAMRIID is conducting trend analysis. If I list one mishap in a given year caused, for example, by equipment failure, that could range anywhere from a centrifuge failure to a minor pinhole tear in a blue suit. For example, we had two mishaps, relatively close together, in which the HEPA filter attachment to the blue suit failed. Based on the trend, we contacted the manufacturer, and to alleviate the problem, they modified their quality audit procedures and we modified our pre-operational checks. This equipment failure is, however, independent of any others. Again, the number attributed to equipment failure would not provide any evidence of trend analysis. We believe our actions prevented more failures, but there would be no way for the reader to determine that.

I'd like to you to know that there was significant concern among my senior staff about the release of the mishap information we have given to the committee. Although the NRC report only provided recommendations, not requirements, I believed it was important to provide mishap details to the public, and I still do. However, while I believe the information we provided fulfills the NRC recommendations, I am not sure the additional details you are requesting would provide any more information of significance—and frankly I'm concerned that they could be readily misunderstood or misrepresented.

## 2. Maximum Credible Event Scenarios

I think this question may be approaching the NRC's criticism of the USAMRIID EIS—namely, that combining a series of failures to create a “breach of all containment systems” is not a credible event scenario. According to the Tornado History Project ([www.tornadohistoryproject.com](http://www.tornadohistoryproject.com)), since 1950 there have been 297 tornadoes in Maryland, 29 of those in Frederick County. Only one Frederick County tornado was rated F3 or greater (F3 in May 1983). For comparison, during the same time period, there were 3,667 tornadoes in Kansas with 203 rated F3 or greater. Tornadoes in general, and an F3 tornado specifically, are uncommon events in Frederick County.

An F3 tornado would not result in a breach of containment and the release of hazardous materials, animals, or insect vectors. No containment suite includes an outside wall or roof surface. All containment areas are insulated from the exterior of the building by at least a 10 foot wide barrier hallway (box within a box). The containment walls are either filled concrete block (BSL-3) or 12 inch thick poured, reinforced concrete (BSL-4). Exterior projectiles would need to penetrate the exterior wall, traverse (at a minimum) the barrier hallway, and still carry enough force to penetrate the containment wall. Windows in the containment laboratories are forced entry ballistic resistant type.

As soon as there is notification or realization of a weather-related emergency, the containment labs would be vacated in the usual way, with all BSAT stored and secured. As you are well aware, USAMRIID has emergency back-up power capability, but assuming that is also off-line, containment laboratories would not go positive; air movement would be static (no air coming out, no air going in). Loss of power to the freezers would significantly degrade and eventually destroy the agents inside, but would not create any loss of control over the material. The new USAMRIID will receive its electrical power from the Central Utility Plant. The technology used in the CUP will provide USAMRIID an uninterrupted power source; the CUP is able to use natural gas and fuel oil (stored on site) to run generators; and the electrical feed from the CUP to USAMRIID is underground. The new USAMRIID also will have organic generator capability for critical systems. Therefore, complete power loss, while not impossible, will be much less likely in the new facility.

The current USAMRIID has limited passive fire protection systems, but the recapitalization project has passive fire suppression systems throughout the building, including in the laboratories. The alarm systems automatically alert the Ft. Detrick Fire Department (FDFD), which is located less than a mile from the National Interagency Biodefense Campus and will be relocating even closer (October 2012). Fire drills are conducted routinely. Fire extinguishers are located throughout the building in accordance with fire prevention standards and checked on a monthly basis, and all laboratory workers complete required training from the FDFD in the use of the equipment.

Most significantly, any BSAT materials exposed to fire would not survive. Heat, in the form of high-pressure steam, is one of the primary means used to assure destruction of BSAT materials. Fire would be absolutely effective. There are no natural gas lines to USAMRIID or accelerants stored in USAMRIID.

I'd like to make one final point. The atmosphere inside a containment lab is not laden with BSAT. As you saw (and, I hope, remember), personnel routinely work in BSL-3 labs in scrub suits without respiratory protection, but they do use additional personal protective equipment based on the risk associated with the specific procedure. Biological materials are kept in heavy-duty, locking freezers within the suites. The constant air filtration and the required use of negative pressure biosafety cabinets while BSAT materials are being handled make the chance that there is something actually in the air in a containment lab remote at best—and even if there were, it would be trapped in the exhaust filter. This is a good illustration of why containment laboratories operate with multiple and redundant safety systems in place.

I hope this additional information is useful.